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GEOGRAPHICAL PUBLICATIONS

(Reviews and Titles of Books, Papers, and Maps)

For key to classification see ''Explanatory Note'' in Vol. II, pp. 77-81

NORTH AMERICA

UNITED STATES

General

HENRY, A. J., chairman, E. H. BOWIE, H. J. COX, and H. C. FRANKENFIELD (Board composed of). **Weather forecasting in the United States.** 370 pp.; maps, diagrs. *Weather Bur.* [*Publ.*] *No. 583.* U. S. Dept. of Agric., Washington, D. C., 1916.

The study of the atmosphere began when primitive man observed the local weather signs. These he used as prognostics, in foretelling coming weather changes. Gradually a collection of weather proverbs was built up, and today, in spite of the ''official'' forecasts, all of us still depend more or less upon local signs and prognostics. As in the earliest days, so now, weather forecasting is the aspect of atmospheric study which has the widest popular interest. It is the immediately practical human aspect of meteorology and for that reason appeals to every one. Thus it is natural that any published discussion of weather forecasting should attract attention.

The present volume is the outgrowth of a desire on the part of the Weather Bureau to bring together the principles which have guided the official forecasters in their daily work, in order that the experience of those who have gone before may be available for the guidance of those who are to come after. Various members of the forecasting staff have contributed to the volume, and the whole has been compiled by an editorial board under the chairmanship of Professor A. J. Henry. There have been a good many publications which have treated various aspects of the forecasting problem, especially from the ''popular'' standpoint, but the present discussion is by far the most complete of them all.

Let it not be thought that this series of discussions on weather forecasting will furnish ''interesting reading,'' in the ordinary meaning of those words. There are too many details, of forms, and movements, and interactions, and characteristics of cyclones and anticyclones, to give the volume the popular appeal which its title suggests. Students of meteorology who desire to make a serious attempt to master the principles of weather forecasting in the United States will find it an invaluable text-book and guide. And others, interested in the pedagogic aspects of the science, will find the carefully selected standard ''type'' maps very helpful for purposes of illustration and discussion.

Those who read the volume through cannot fail to be impressed with the extraordinary complexity and difficulty of weather forecasting. Here we find the forecasters telling us all their ''secrets,'' and making clear to us just what considerations govern them in their daily work of weather prediction. And here we find, also, many general matters, pertaining to other aspects of meteorology. Thus we read (p. 126): ''The observant forecaster can add but little of importance toward clearing up the source of energy of the high . . . . . . It seems reasonable to assume that radiation to space has an important bearing upon the formation and maintenance of highs.'' The modifying influence of the Great Lakes on cold waves is clearly pointed out (pp. 151-152). The series of type weather maps showing conditions favorable for frost in different sections of the country (Figs. 101-124) and of snow and sleet types (Figs. 163-170) are especially noteworthy. The conclusion is reached (p. 202) that ''a dew point reading in the evening is no indication of the ensuing minimum temperature.'' In the discussion of fog forecasts there are two *new* text figures showing fog frequency on the Atlantic and on the Gulf coasts (Figs. 171, 174). The chapter on long-range forecasts contains the none too emphatic statement ''That there is not at this time, nor is it probable that there will be in the near future, a sound basis for such forecasts is . . . unquestionably true,'' with, it may be added, the notable exception of the Indian monsoon forecasts. Reference is made to the now well-recognized importance of the weather controls exercised by ''centers of action,'' and a series of ''precepts'' is listed (pp. 345-346) which embody the results reached in the Forecast Division regarding the control of the weather in the United States by our neighboring ''centers of action.'' A bibliography of works *in English* dealing with forecasting concludes the volume.

The Weather Bureau has done a good service in having this series of studies of weather forecasting compiled and published. Teachers and students of meteorology, although not directly interested in forecasting, will here find much information about our weather types and phenomena, and, as suggested above, will be able to put to good use the many excellent ''type'' maps. It is a pity that so valuable a publication should be known officially as ''W. B. No. 583''—surely a nondescript designation.

R. DeC. Ward.

James, G. W. **Our American wonderlands.** ix and 297 pp.; ills., index. A. C. McClurg & Co., Chicago, 1915. $2.00. 8 x 5½.

The only map in this volume is an outline on the inside of the cover and on the first fly-leaf locating the places which serve as themes of about thirty chapters which make up the book. The geographer would like to see some local maps included, but perhaps their absence is justified by the author's intention to arouse interest in American scenery rather than to provide a guide book. All the places but three are west of the Mississippi River, a plan supported in part by nature and perhaps fully by the experiences of the author. The three chosen features in the East are the Mammoth Cave, the Natural Bridge of Virginia, and Niagara. It would be easy to enlarge the eastern list and perhaps to improve it without making it larger. It is appropriate that a volume which opens with the Grand Canyon, the masterpiece of nature in America, should close with a waterfall the most studied, the most written about, and the most visited of all phenomena of its class.

The author's choice is not only western, but southwestern. He could not omit Mt. Rainier, Glacier National Park, the Yellowstone, or Crater Lake, but, duty done, he moves southward. Colorado comes off with Pikes Peak, the Garden of the Gods, and Mesa Verde, but Utah perhaps would like to add to her natural bridges the story of her Wasatch and of her Great Salt Lake, with its wonderful history. California, New Mexico, and Arizona claim major places in the author's appreciation, and the choice in some cases betrays his favoritism. But the purpose is worthy—while war shuts Americans from too exclusive visits across the sea, to open to them the greater natural glories of America. James thinks also that the cliff dwellings are as fascinating as Rhine castles, and the Hopis, Apaches, and Navajos more picturesque than the peasants of Switzerland, Ireland, or Russia. The volume is illustrated with about one hundred and fifty views, and the text is vivacious and interesting. A. P. Brigham.

Bailey, L. H. **The forthcoming situation in agricultural work—II.** *Science,* Vol. 43, 1916, Jan. 21, No. 1099, pp. 77-87. [Retiring vice-presidential address, Section M, American Association for the Advancement of Science, Columbus, O., meeting.]

Bauer, L. A. **Work done by the United States Coast and Geodetic Survey in the field of terrestrial magnetism.** *Science,* May 12, 1916, pp. 666-667. [Abstract of an address at the centennial exercises of the U. S. Coast and Geodetic Survey.]

Black, W. M. **The United States Corps of Engineers and its relation to the United States Coast and Geodetic Survey.** *Science,* May 12, 1916, pp. 669-670. [Abstract of an address at the centennial exercises of the U. S. Coast and Geodetic Survey.]

Bowie, William. **The one-hundredth anniversary of the United States Coast and Geodetic Survey: Account of the celebration.** *Science,* May 12, 1916, pp. 655-656.

Burger, W. H. **Contributions of the United States Coast and Geodetic Survey to geodesy.** *Science,* July 7, 1916, pp. 4-11. [Address given at the centennial exercises of the Survey.]

—— **Climatological data for the United States by sections: Year 1915** (Vol. 2, No. 13). 346 pp.; maps. *U. S. Weather Bur. [Publ.] No. 576.*

—— **Cotton production in the United States: Crop of 1915.** 28 pp. Bur. of the Census, Dept. of Commerce, Washington, D. C., 1916.

Faust, A. B. **Swiss emigration to the American colonies in the eighteenth century.** *American Hist. Rev.,* Vol. 22, 1916, No. 1, pp. 21-44. [Essay based on material in Swiss archives on the distinctive features of Swiss emigration: (1) governmental obstruction at home, (2) social ostracism, (3) deprivation of all rights and privileges. Also a record of important Swiss colonial expeditions to America, chiefly to South Carolina and Pennsylvania.]

—— **Geographic Board, United States, Fourth report of the, 1890 to 1916.** 335 pp. U. S. Geographic Board, Washington, D. C., 1916. [Contains the official spelling of all names passed on by the board since its inception.]

GROSVENOR, G. H. **The land of the best: (A tribute to the scenic grandeur and unsurpassed natural resources of our own country).** Ills. *Natl. Geogr. Mag.,* Vol. 29, 1916, No. 4, pp. 327-430. [Remarkable photographs, many of which are of geographic value.]

GROVER, N. C., A. H. HORTON, AND W. E. HALL. **Surface water supply of the United States, 1914. Part 3: Ohio River basin.** xxxii and 125 pp.; ills., index. *U. S. Geol. Survey Water-Supply Paper 383.* Washington, D. C., 1916.

HAZARD, D. L. **Results of magnetic observations made by the United States Coast and Geodetic Survey in 1915.** 80 pp. *U. S. Coast and Geod. Survey Special Publ. No. 36.* Washington, D. C., 1916.

—— **Highways, National, and good roads everywhere.** 49 pp.; maps, ills. National Highways Assoc., Washington, D. C., 1913.

JAMES, J. A. **Some phases of the history of the Northwest, 1783-1786.** *Proc. Mississippi Valley Hist. Assoc. for the Year 1913-14,* Vol. 7, pp. 168-195. [A discussion of the relation of George Rogers Clark to some of the phases of Western history during the three years after the declaration of peace.]

JOHNSON, D. W. **The contribution of the United States Coast and Geodetic Survey to physical geography.** *Science,* May 12, 1916, pp. 673-674. [Abstract of an address at the centennial exercises of the U. S. Coast and Geodetic Survey.]

JONES, G. M. **Government aid to merchant shipping.** 265 pp.; index. *Bur. of Foreign and Domestic Commerce Special Agents Ser. No. 119.* Dept. of Commerce, Washington, D. C., 1916.

JOSEPH, SAMUEL. **Jewish immigration to the United States from 1881 to 1910.** 209 pp.; bibliogr. *Columbia Univ. Studies in Hist., Econ. and Public Law,* Vol. 59, 1914, No. 4: Longmans, Green & Co., New York, 1914. $1.25. 10 x 6½. [For extended review, see article ''Our Immigrant Problem,'' by Ellsworth Huntington in the December, 1916, *Review,* pp. 458-463.]

LA FLESCHE, FRANCIS. **Protection of Indian lands.** *Rept. of the 33rd Ann. Lake Mohonk Conference on the Indian and Other Dependent Peoples, Oct. 20, 21, and 22, 1915,* pp. 70-72.

LITTLEHALES, G. W. **Hydrography and charts, with special reference to the work of the United States Coast and Geodetic Survey.** *Science,* May 12, 1916, pp. 670-671. [Abstract of an address at the centennial exercises of the U. S. Coast and Geodetic Survey.]

MACFARLANE, J. J. **American trade in 1915.** Diagrs. *Commerc. America,* Vol. 12, 1916, No. 11, pp. 9, 11, 13, and 15.

MCWILLIAMS, R. F. **Our neighbors of the south.** *Proc. Mississippi Valley Hist. Assoc. for the Year 1913-14,* Vol. 7, pp. 334-346. [Comparison, by a Canadian—hence the title—of the development of the Canadian West and the Northwest of the United States.]

MENDENHALL, T. C. **The one hundredth anniversary of the U. S. Coast and Geodetic Survey.** *Science,* July 14, 1916, pp. 45-50. [Address given at the centennial exercises of the Survey.]

MOORE, J. H. **The United States Coast and Geodetic Survey's part in the development of commerce.** *Science,* May 12, 1916, pp. 667-669. [Abstract of an address at the centennial exercises of the U. S. Coast and Geodetic Survey.]

PILLSBURY, J. E. **Ocean currents and deep-sea explorations of the United States Coast and Geodetic Survey.** *Science,* May 12, 1916, p. 667. [Abstract of an address at the centennial exercises of the U. S. Coast and Geodetic Survey.]

POOR, C. L. **Oceanic tides, with special reference to the work of the United States Coast and Geodetic Survey.** *Science,* May 12, 1916, pp. 672-673. [Abstract of an address at the centennial exercises of the U. S. Coast and Geodetic Survey.]

North Atlantic States

COMSTOCK, SARAH. **Old roads from the heart of New York.** xxiv and 401 pp.; ills., index, bibliogr. G. P. Putnam's Sons, New York, 1915. $2.50. 9 x 6.

Belongs to the type of gossipy historical annals, but is based on ample historical knowledge and attractively illustrated. The ancient roads are followed in a diffuse way, and sometimes with a superabundance of anecdote, into Long Island and Staten Island, westward into New Jersey and northward along the Hudson.

There are two folding maps, one of the date 1828, ''showing the country thirty miles round the City of New York,'' and a larger map of the same area drawn for this volume. This map shows the railroads and trolley lines, with sufficient fullness of names to make the map a useful guide to the text. For a student already familiar with the lore of Old New York and with leisure for many short journeys the book is a helpful companion. To the general reader, with small local knowledge, the work makes a less effective appeal.

There are about one hundred half tone views, a good chapter of ''easy routes for the traveler of today,'' and a bibliography of more than one hundred titles.

A. P. BRIGHAM.

GOODNOUGH, X. H. **Rainfall in New England.** Map, diagrs. *Journ. New England Water Works Assoc.*, Vol. 29, 1915, pp. 237-438. Boston.

Mr. Goodnough's paper is one of the many that appear in the *Journal of the New England Water Works Association* and that deserve the careful attention of meteorologists and climatologists. Most of it consists of a full series of tables showing the monthly rainfall in New England and at a few neighboring stations. No previous tables have embraced so many records in addition to those made under the direction of the U. S. Weather Bureau.

In his text Mr. Goodnough gives a new map of rainfall in New England. It shows with great clearness the effect of relief in causing abundant rainfall at high altitudes and on the eastern side of the main highlands. It also emphasizes the diminution of rainfall from the coast inland. A series of diagrams emphasizes another and much less commonly recognized contrast between the coast and the interior. On the coast the rainfall in summer is decidedly less than in winter, for New England is only a little north of the latitudes where subtropical summer droughts prevail in large parts of the world. Even a hundred miles inland, however, the summer indraft and winter outdraft due to continental heating and cooling cause a reversal, so that summer rains much exceed those of winter. All over New England the summer rainfall is almost the same, which is good for agriculture, but the winter rainfall, which is of chief importance in determining the value of a water supply for city use or for power, varies a good deal from the favored coast to the less favored interior.

Mr. Goodnough also discusses the question of periodicity in rainfall. He agrees with other observers in finding no regular period, but he is impressed by the fact that periods of ten or fifteen years sometimes have a rainfall quite persistently above or below normal. He also calls attention to the fact that during the first half of the last century severe droughts seem to have been more frequent than during the second half.

ELLSWORTH HUNTINGTON.

BLACK, G. F. **List of works in the New York Public Library relating to the geology, mineralogy, and palæontology of New Jersey.** *Bull. New York Public Library*, Vol. 20, 1916, No. 6, pp. 501-525.

DUBLIN, L. I. **Factors in American mortality: A study of death rates in the race stocks of New York State, 1910.** Diagrs. *Amer. Econ. Rev.*, Vol. 6, 1916, No. 3, pp. 523-548.

GOLDTHWAIT, J. W. **Glaciation in the White Mountains of New Hampshire.** Map, diagr. *Bull. Geol. Soc. of Amer.*, Vol. 27, 1916, No. 2, pp. 263-294. [The author concludes that Alpine glaciation in the White Mountains took place *before* the last advance of the continental ice sheet. The local glaciers were probably confined to favorable situations on the sides of the peaks which exceed 4,500 feet elevation, and continued long enough to carve out well-defined cirques. The ensuing ice sheet, which moved from northwest to southeast, obliterated all local valley moraines, but spared the cirques at the heads of the ravines.]

GREENE, NELSON. **The story of old Fort Plain and the middle Mohawk Valley.** xv and 399 pp.; maps. O'Connor Brothers, Fort Plain, N. Y., 1915. $1.50. 9 x 6½. [''A review of Mohawk Valley history from 1609'' to the present, ''treating particularly of the central region comprised in the present counties of Herkimer, Montgomery, and Fulton.'']

GUERNSEY, S. J. **Notes on explorations of Martha's Vineyard.** Map, diagrs., ills. *Amer. Anthropologist*, Vol. 18, 1916, No. 1, pp. 81-97. [Archeological survey near Gay Head.]

—— **Iroquois Indian groups of the New York State Museum, The.** *Science*, June 16, 1916, pp. 844-846.

KATZ, F. J. **Note on a moraine in northwestern New England.** *Science*, July 21, 1916, p. 102.

MAXON, E. T., AND W. R. CONE. **Soil survey of Clinton County, New York.** 37 pp.; maps. Bur. of Soils., U. S. Dept. of Agric., Washington, D. C., 1916.

Sealey, D. A. **Rapid transit work in 1915, New York City.** Maps. *Engineering News,* Vol. 75, 1916, No. 18, pp. 842-849.

Skerrett, R. G. **A difficult piece in subaqueous rock excavation.** Map, ills. *Scientific American,* Sept. 9, 1916, pp. 235 and 247. [Coenties Reef is the chief stumbling block to navigation in the East River. Under it will pass the Whitehall-Montague St. tunnel connecting Manhattan and Brooklyn.]

Wells, J. P. **Record flood from melting snows passes through Rochester, N. Y.** Maps, diagr., ills. *Engineering Rec.,* Vol. 73, 1916, No. 15, pp. 476-478.

EUROPE

British Isles

Martin, E. A. **Dew-ponds: History, observation, and experiment.** 208 pp.; ills., index. T. Werner Laurie, Ltd., London, [1915?]. 6s. 7½ x 5.

Situated on the downs of England and notably in the region of Kent and Sussex there are a number of small ponds which, because they hold water even during long dry periods, have attracted special attention. These ponds are higher than many that are entirely evaporated or that dry up during a prolonged drought.

Mr. Edward A. Martin questioned the efficiency of dew in the replenishment of these ponds, and therefore took up an elaborate study of them in the hope of arriving at a safe conclusion as to their source of water supply. Many of the more noted of the dew-ponds were carefully watched. Thermometers were placed in and about the ponds. Observations as to the rainfall, amount of dew, humidity, and fogs in the vicinity of the downs were made. Finally a special pond was constructed for experimental purposes.

From the historical standpoint, these ponds have a special interest, for it is believed that they may date back to the time of Neolithic and possibly of Paleolithic man. They now supply drinking water for stock, and possibly they may have been the source of water for early peoples living upon these downs. They are located in the region of the chalk beds, and the puddled chalk is efficient in preventing waters from sinking readily into the ground. They have in some cases been constructed with great care, and layers of straw have been interbedded with rocks and clays. The experiments and observations carried on by Mr. Edwards convinced him that the ponds are not replenished by the formation of dew upon the water surface, nor by the formation of dew on the lands or shrubbery about the ponds. He has found that the amount of dew which forms upon the downs is quite insufficient to account for the perennial nature of these higher ponds. The mists and fogs, however, which are very common and which render the vegetation about the ponds ''wringing wet,'' must be important factors in supplying water upon the downs; and these, with the help of rainfall, must account for the replenishment of the water supply. It would seem more appropriate to use the term ''mist-pond'' rather than ''dew-pond.'' W. W. Atwood.

Perris, G. H. **The industrial history of modern England.** 603 pp. Henry Holt & Co., New York, 1914. $2.00. 7½ x 5.

A book by an economist who has dug deep into his material, and handled it well from the scientific standpoint. He also has a pleasing element of the dramatic in his writing. He thinks the world once suffered greatly from *a priori* philosophizing, and his aim is ''to state and classify facts, not to deduce eternal and immutable laws.''

He thinks the hundred and fifty years from 1760 to 1910 are a veritable alp in the plain of human history. This period falls into three parts, divided by 1815 and 1850—dissolution, stagnation, and reconstruction. He shows himself a modern in that he sees the reconstruction not primarily by *men,* but by forces. ''England has been fundamentally remade . . . . . . The greatest of those governing personages with whom the historians are mainly concerned look small in the perspective of this mighty change. Its sheer violence overclouds most of our story. The individuals who emerge mimic the tumult of the impersonal forces that drive them on, shouting as the Wagnerian hero must shout through an orchestral whirlwind.''

Mr. Perris shows his kinship to the geographer who believes that man's environment made him. In fact he simply carries the point on into an environmental detail—a man's occupation. ''As surely as the dyer's hand shows his trade does the technique of every industry, from the simplest to the most complex, reflect itself, not only in the individual, but in the collective and social character of the workers.''

The book ends with an acceptance of the doom of perpetual change, while we continue to discover new powers in nature. ''The industrial revolution has no beginning and no end.'' There are thirty-three pages of appendices giving useful facts and figures on British production, population income, foreign trade wages and prices.

J. RUSSELL SMITH.

ARMSTRONG, J. S., JR. **Bristol.** *Suppl. to Commerce Repts.,* Ann. Series, 1916, No. 19j, pp. 1-11. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C.

BISSOLI, LUIGI. **Problemi di geografia commerciale conseguenti alla coscrizione militare inglese.** *L'Esplorazione Commerc.,* Vol. 30, 1915, No. 12, pp. 441-445.

D[INES], J. S. **Atmospheric pollution in English and Scottish towns.** By J. B. C. Kershaw. *Monthly Weather Rev.,* Vol. 44, 1916, No. 3, p. 114. [Reprinted from *Science Abstracts,* Sect. A, Jan. 31, 1916. See also note in October, 1916, *Review,* p. 307.]

HATHAWAY, C. M., JR. **Hull.** *Suppl. to Commerce Repts.,* Ann. Series, 1916, No. 19j, pp. 11-28. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C.

MCCUNN, J. N. **Glasgow.** *Suppl. to Commerce Repts.,* Ann. Series, 1916, No. 19i, pp. 1-10. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C.

MACMILLAN, H. R. **Notes on state forestry in Ireland.** *Forestry Quarterly,* Vol. 14, 1916, No. 3, pp. 461-466. [''Ireland, alone of the four divisions of the United Kingdom, has made an organized beginning in state development of forestry. That this should be so is one of the fruits of the remedial land legislation of the last two decades.'']

SMITH, ALEXANDER. **A summer in Skye.** With introduction by W. F. Gray. xviii and 574 pp.; ills., index. W. P. Nimmo, Hay, & Mitchell, Edinburgh, 1912. 8 x 6.

STRAHAN, AUBREY, N. F. MACKENZIE, H. R. MILL, AND J. S. OWENS. **The investigation of rivers: Final report.** 93 pp.; maps, diagrs. *Royal Geogr. Soc. Special Publ.* London, 1916.

WADDELL, P. H. **Troon agency [Scotland].** *Suppl. to Commerce Repts.,* Ann. Series, 1916, No. 19i, pp. 10-12. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C.

ASIA

INDIA

MUNSON, ARLEY. **Kipling's India.** xii and 204 pp.; ills., index. Doubleday, Page & Co., Garden City, N. Y., 1915. $1.50. 9½ x 6½.

A delightful journey from Bombay to Mandalay via Simla, the Khyber Pass, the Ganges plain, Calcutta and Rangoon, described, with the help of many quotations from Kipling and numerous excellent photographs, by one who knows India at first hand and has the ability to make lively pen pictures.

Doctor Munson has rendered a fine service to general readers in giving most of Kipling's India stories a geographical setting. Yet the setting is not complete unless the reader has an atlas at hand, for the book lacks a much-needed map. If the author herself had made greater use of a map she would not have Simla ''on the northeastern border [of India] among the Himalaya Mountains.''

The book will lead those who know their Kipling to reread his India stories in the light of their surroundings with enhanced pleasure. It will induce the uninitiated, if there be such, to make friends with this master of the art of story telling and his entrancing characters. Some may say that an attempt to so interpret Kipling's India will dispel his remarkable magic and mystery of atmosphere. But those who are geographically inclined will gladly welcome the attempt to give the stories a habitation.

Geographers, and perhaps others, would wish less space given in the book to the background of racy stories of Anglo-Indian social life and more to the setting of the tales of native life. However, as it is, there is much of human geography woven into the journey from where ''The Injian Ocean sets and smiles'' before Bombay to ''the Road to Mandalay.''

SUMNER W. CUSHING.

COTTER, G. DE P. **Contents and index of the Memoirs of the Geological Survey of India, Vols. 21-35, 1884 to 1911.** 119 pp. Calcutta, 1916.

DUCHESNE, A. E. **India: A storehouse of empire.** Ills. *United Empire,* Vol. 7, 1916, No. 5, pp. 327-329.

HAYDEN, H. H. **General report of the Geological Survey of India for the year 1915.** *Records of Geol. Survey of India,* Vol. 47, 1916, Part 1, pp. 1-41. Calcutta.

HOLLAND, T. H. **Quinquennial review of the mineral production of India.** xlvi and 296 pp.; maps, diagrs., index. *Records of Geol. Survey of India,* Vol. 46. Calcutta, 1915.

—— **Plains of northern India, The, and their relationship to the Himalaya Mountains.** *Nature,* No. 2436, Vol. 97, 1916, July 6, pp. 391-393. [''Abridged from an address to the Indian Science Congress at Lucknow on January 13 by the president, Sir Sidney Burrard, F.R.S.'']

RUNDALL, L. B. **The ibex of Sha-Ping and other Himalayan studies.** xiv and 152 pp.; ills. Macmillan and Co., Ltd., London, 1915. $3.50. 10 x 7½. [Big-game hunting in the Himalayas.]

—— **Sind, Sea-borne trade of, in 1915-16.** *Board of Trade Journ.,* No. 1,030, Vol. 94, 1916, pp. 556-557. [Notes that in the Punjab the monsoon of 1915 was much less active than usual, with rain falling only in ''sporadic showers at long intervals;'' consequently the total area sown to crops in 1915-16 was 27 per cent below normal. In Sind, although the inundation of the Indus was one of the lowest recorded, the favorable set of the rivers at the mouths of the irrigation canals maintained the level normal and cultivation as usual.]

—— **Statistical abstract relating to British India. No. 45: 1900-01 to 1909-10,** viii and 288 pp; **No. 46: 1901-02 to 1910-11,** viii and 293 pp.; **No. 47: 1902-03 to 1911-12,** viii and 293 pp.; **No. 48: 1903-04 to 1912-13,** viii and 285 pp; **No. 49: 1904-05 to 1913-14.** Index. *British Parliamentary Papers Cd. 6017, 6637, 7078, 7799, and 8157,* respectively, London, 1911, 1913, 1913, 1915, 1916.

WORKMAN, F. B. **Four miles high.** Ills. *The Independent,* June 5, 1916, pp. 377-378 and 380, 382, 383. [Ascents in the Himalayas.]

WORKMAN, W. H. **The mountaineering aspect of Himalayan glaciers.** Ills. *Alpine Journ.,* No. 210, Vol. 29, 1915, pp. 284-300.

AUSTRALASIA AND OCEANIA

AUSTRALIA, NEW ZEALAND

COTTON, C. A. **The structure and later geological history of New Zealand.** Maps, diagrs., ills. *Geol. Magazine,* Decade 6, Vol. 3, No. 6, 1916, pp. 243-249; No. 7, pp. 314-320.

The author of this paper has recently published an excellent outline of the coastal physiography of New Zealand in the *Review* (''The Fault Coasts of New Zealand,'' Vol. 1, 1916, pp. 20-47). The present paper forms a fitting complement to the earlier one, and, since both are planned in a comprehensive way and represent the latest information, they constitute a standard source of material on the physiography of New Zealand. They deserve special attention on account of the extraordinary variety of forms related to block faulting. It is shown that the skeleton or oldermass of New Zealand is largely composed of sedimentary rocks whose deformation in late Jurassic or early Cretaceous times produced a great mountain range with a geanticlinal structure. But the folds of this oldermass are not now in agreement with the main features of the two chief islands. The shore-line cuts diagonally across the folds, giving the ridges and intervening valleys an *en échelon* arrangement. The strike of the rocks is in general 10° to 15° east of north, while that of the coast is northeast. The coasts themselves have been formed by faulting of very complicated nature, as described in the paper referred to above.

The oldermass was reduced by long-continued erosion to at least moderate relief before the deposit of covering beds (Cretaceous). In places the erosion surface was somewhat hilly when submergence and deposition began, so that some hills survived as islands during a portion of the period in which the sedimentary cover was developed. There followed a period of uninterrupted deposition extending far into the Tertiary. Then came orogenic movements to which the present relief is entirely, or almost entirely, due. This occurred in or about the Pliocene period and was characterized by block faulting, local in its effects. Many of the valleys are tectonic in origin; of like origin are some remarkable intermontane basins drained by rivers that flow out of the basins through deep gorges cut across the oldermass of bordering, upthrown blocks. In some of the uplifted blocks, the surfaces of which were slightly tilted from their former horizontal attitude, remnants may be seen of the fossil denudation plain now exposed by the erosion of the covering strata. The article is accompanied by a figure which shows a fragment of such a plain in South Canterbury. In places the faulting to which we have referred is so minute and general that the landscape is described as "a mosaic of blocks."

BLATCHFORD, T. **The geology and mineral resources of the Yilgarn goldfield.** 189 pp.; maps, diagrs., ills., index. *Geol. Survey of Western Australia Bull. No. 63,* Part 51, Perth, 1915. [A region midway between Kalgoorlie and Perth in southwestern Australia, with a rainfall under 10 inches a year. Part of the water supply comes from an extension of the well-known Coolgardie scheme, part of it from large reservoirs sunk in the dry watercourses. For the rest, the report consists of detailed notes on the mining geology of the region.]

BRITTAIN, J. I. **Australia.** *Suppl. to Commerce Repts.,* Ann. Series, 1916, No. 60a, pp. 1-8. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C.

CAMBAGE, R. H. **Notes on the native flora of tropical Queensland.** Maps, ills. *Journ. and Proc. Royal Soc. of New South Wales for 1915,* Vol. 49, 1916, Part 3, pp. 389-447. Sydney.

CAPRA, GIUSEPPE. **La Vittoria: Il giardino Australe.** 50 pp.; ills. Prem. Scuola Tip. Calesiana, Milan, 1913.

COTTON, L. A. **Some geo-physical observations at Burrinjuck.** Diagrs. *Journ. and Proc. Royal Soc. of New South Wales for 1915,* Vol. 59, 1916, Part 3, pp. 448-462. Sydney. [Abstracted under the title "A New Experiment on the Strength of the Earth's Crust" in the December *Review,* p. 473.]

HARPER, L. F. **Geology and mineral resources of the southern coal-field. Part I—The south coastal portion.** xiv and 410 pp.; maps, diagrs., ills., index. *Memoirs Geol. Survey of New South Wales No. 7.* Sydney, 1915. [The greater part of this memoir is devoted to detailed geology, vulcanology, and petrology.]

HUNT, H. A. **Australian monthly weather report and meteorological abstract: January, 1913.** Maps. *Commonwealth Bur. of Meteorol.* [*Publ.*], Vol. 4, No. 1, pp. 5-60. Melbourne, 1916.

HUNT, H. A. **Australian monthly weather report and meteorological abstract: February, 1913.** Maps. *Commonwealth Bur. of Meteorol.* [*Publ.*], Vol. 4, No. 2, pp. 65-119. Melbourne, 1916.

MAGELSSEN, W. C. **Melbourne.** *Suppl. to Commerce Repts.,* Ann. Series, 1916, No. 60a, pp. 8-23. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C.

MURRAY, R. A. F. **The Tanjil or Russell's Creek gold-field.** 20 pp.; map, diagrs., index. *Bulls. Geol. Survey of Victoria No. 38.* Victoria, 1916.

SÜSSMILCH, C. A., AND W. G. STONE. **Geology of the Jenolan Caves district.** Diagrs., ill. *Journ. and Proc. Royal Soc. of New South Wales for 1915,* Vol. 49, 1916, Part 3, pp. 332-384. Sydney. [With section on physiography.]

WHITELAW, O. A. L., J. P. L. KENNY, AND J. G. EASTON. **The Mitta Mitta tin and gold-field.** With petrographic notes by D. J. Mahony. 23 pp.; map, diagrs., ills. *Bulls. Geol. Survey of Victoria No. 37.* Victoria, 1915.

WORLD AS A WHOLE AND LARGER PARTS

BANSE, EWALD. **Illustrierte Länderkunde.** Herausgeben unter Mitwirkung von J. Daneš, M. Holzmann, O. Nordenskjöld, und anderen. 335 pp.; map, ills. George Westermann, Braunschweig, 1914. 9½ x 6½.

The title is indeed justified, for there are 64 illustrations that are admirable for beauty and geographic interest, starting off with a view so unusual as that of Mecca. But the point of the book is not in its wonderful pictures nor its geographic descriptions, but in its presentation of the world in fifteen "natural divisions" instead of six continents and two groups of polar lands. Readers of *Petermanns Mitteilungen* will recall Ewald Banse's paper on the Orient (Vol. 55, 1909), conceived as including Persia, Asia Minor, and Arabia, with Africa north of the Sahara, a theme later elaborated in three small volumes (The Atlas Region, The Arabian Orient, The Aryan Orient, B. G. Teubner, Leipzig, 1910). The Orient is the main home of Islam, a unit under many aspects, although it includes parts of two continents. The idea is a good one, for it abandons time-honored but arbitrary notions that hinder progress.

In this volume Banse extends his principles of divisions into natural units to the whole world. (A preliminary paper, with map, appeared in *Petermanns Mitteilungen* for 1912. The map, substantially the same as that which accompanies the present work, was reviewed in the *Bull. Amer. Geogr. Soc.*, Vol. 44, 1912, p. 240.) Eight authors have aided him with results that are very uneven: Africa south of the Sahara is *Nigritia. Europe* is one division as far east as 25° from Greenwich—in mid-Russia. Here *Greater Siberia* begins, to extend to the Pacific. *Mongolia* is a division by itself. *East Asia* includes Manchuria, Korea, Japan, and eastern China. *India* takes in Indo-China and the East Indies. *Greater Australia* means New Guinea, New Zealand, and the rest of the islands with the continent Australia. *Arctis* and *Antarctis* explain themselves. *Central America* includes the West Indies. North of this the mountainous West is *Cordilleria* and south of it *Andina.* From the Rockies eastward to the ocean is *America,* and east of Andina is *East South America.*

This is a most interesting attempt. Greater Australia, Greater Siberia, and Nigritia are acceptable at sight. India and Central America open up more discussion with their inclusion of the East and West Indian islands, for insularity has marked geographic consequences. East Asia has an enormous range of geographic contrasts as compared with the monotonous Orient. In other words, the Orient is a relatively simple group of earth features. To match it throughout the world would give a very large number of natural divisions, many more than Banse's fifteen. This is strikingly true of ''Europe,'' a natural division of great complexity, of which the Mediterranean border is closely allied to the African coast, which is so large a part of Banse's Orient. On many grounds ''Europe'' might well include North Africa down to the Sahara, for the Sahara is a true boundary, while the Mediterranean has always put its border peoples into communication, instead of separating them. Ethnically and culturally the boundary lies in the Sahara. Nigritia is an excellent unit from this viewpoint.

The American divisions, by Alwin Oppel and Willi Ule, are not prepossessing. Mexico and Alaska are as poor bedfellows in Cordilleria, as Venezuela and Chile in Andina. There is nothing about East South America to suggest a natural division, and the name is cumbersome. Only political considerations, which the Canadians would appreciate little, could recommend America as a name for the basins of the Mackenzie, the Mississippi, and the St. Lawrence, together with the Atlantic coast border. Its further subdivision into *Hudsonia* east and west of Hudson Bay, *Appalachia* in the mountains and eastward, and *Missouria,* to include the St. Lawrence and Mississippi basins, is even less attractive. The customary separation of America into two-world divisions at the Isthmus may be open to question; the reviewer finds better grounds for division at the Rio Grande into Latin and English America. It is worth while to note in passing that common use has come to accept the continent names as including more than the actual continent, in the sense of the land mass that holds together. English people may talk of going ''to the Continent'' when they visit France or Germany, but they and we know they are Europeans themselves and the British Isles a part of Europe. So Japan is a part of Asia, like Ceylon, Sumatra, and Java.

The present attempt deserves attention. One cannot try to assign boundaries to geographic divisions without focusing attention on the *criteria.* What would make a geographic division natural? MARK JEFFERSON.

—— **Annuaire Météorologique, 1913, II: Les Iles Féroé, l'Islande, le Groënland et les Antilles.** 88 pp. Dansk Meteorol. Inst., Copenhagen, 1916.

CORNISH, VAUGHAN. **The strategic geography of the British Empire, considered in relation to the Central Powers.** *United Empire,* Vol. 7, N. S., 1916, No. 2, pp. 142-160. [Abstracted in the July *Review,* pp. 66-67.]

DUNNING, W. A. **The British Empire and the United States.** With introduction by Right Honourable Viscount Bryce and preface by N. M. Butler. xix and 381 pp.; index. Charles Scribner's Sons, New York, 1915. $2.00. 9 x 6.

HARDING, GEORGE. **Coaling-ports of the world.** Ills. *Harper's Mag.,* No. 793, Vol. 133, 1916, pp. 27-37. [An account of the picturesque aspects of Port Said, Singapore, Nagasaki, Gibraltar, and Colombo, the most celebrated of the one hundred and forty coaling ports of the world. In the age of sail a vessel could go from China to Liverpool without touching at a port of call. The present-day mail steamer must renew its coal supply frequently even if it must ''buy an island'' for the purpose. The tramp steamer, built chiefly for cargo, is a slave to the geographical distribution of coaling ports and must figure out its coal schedule as carefully as its cargo schedule. There is a last section on the coal ports of the Caribbean and the Pacific in relation to the interests of the United States.]

HAZARD, D. L. **Results of magnetic observations made by the United States Coast and Geodetic Survey at the time of the solar eclipse of August 21, 1914.**

Terrestr. Magnet. and Atmosph. Electr., Vol. 21, 1916, No. 1, pp. 9-14. [Values for the stations Vieques, Porto Rico, Cheltenham, Md., Tucson, Sitka, Honolulu.]

JUMELLE, HENRI. **L'avenir de nos colonies.** Ills. *La Nature*, No. 2226, 1916, May 27, pp. 337-345. [French colonies.]

NEWBIGIN, M. I. **The interrelations of Europe and Asia as exemplified in the Near East.** Map. *Scottish Geogr. Mag.*, Vol. 32, 1916, No. 5, pp. 216-227.

ROBERTSON, J. A. **Bibliography of early Spanish-Japanese relations, compiled from manuscripts and books in the Philippine Library, Manila.** iv and 170 pp.; ills. *Trans. Asiatic Soc. of Japan*, Vol. 43, 1915, Part 1. Tokyo. [Introduction abstracted in the June *Review*, pp. 461-462.]

RONCAGLI, G. **Francia e Italia in Oriente e in Africa.** *Boll. della Reale Soc. Geogr. Italiana*, Vol. 5, 1916, No. 7, pp. 606-612. Rome.

W—, W. C. **Latin-American exports: An opportunity.** Ills. *Bull. Pan American Union*, Vol. 43, 1916, No. 2, pp. 190-204.

EDUCATIONAL GEOGRAPHY

ANDREWS, A. W. **A text-book of geography.** xii and 655 pp.; maps, diagrs., index. Edward Arnold, London, 1913. $1.25. 7½ x 5½.

As one of the most ambitious attempts in recent times to cover the whole field of geography in a single, usable text, this work deserves special notice. It runs to about 230,000 words, as compared with 150,000, 170,000, and 210,000 in the three texts most prominent in England and America. The omission of all illustrations except 115 black-and-white maps renders possible a book of convenient size and weight.

The style is a marvel of condensation. The sentences are short and clearly constructed, but packed with phrases and clauses, each of which adds to the load of meaning. The reader may count on having to take in, on an average, one new idea with every line, or about forty to the page. His ability to do so will depend on his powers of apperception. The process is made more difficult by an excessive use of the parenthesis, not only to interpolate incidental ideas, but for matter logically related to the context. Citations to matter which follows later in the book are so frequent as to constitute a system of pro-ference, rather than of reference. If they are looked up, they are found to fill a gap, but the gain in avoiding repetition is overbalanced by the loss in time and patience of the reader. Condensation, parentheses, pro-ferences, and unsparing use of complex concepts, regardless of the immature or uninstructed mind, render the book rather hard reading at first even for the seasoned geographer. If these difficulties are forced down, more geography will be found to the page than in any other book known to the reviewer. The command and use of facts make it what the author disclaims an attempt to provide, a condensed encyclopedia of geographical information. But more than that, there are few instances where isolated facts are given without explanation or suggestion of correlation with other facts, and thus the encyclopedia is transformed into an organic system. The principal strands on which organization is effected are climate and communications.

Under general geography, climate is treated in a thorough and original manner and without restraint. By the use of the isotherms of 32°, 50°, and 68°, the face of the earth is divided into ten zones and regions in each hemisphere, hot at all seasons, hot summers and warm winters, hot summers and cool winters, hot summers and cold winters, warm at all seasons, warm summers and cool winters, warm summers and cold winters, cool at all seasons, cool summers and cold winters, and cold at all seasons—a set of distinctions sufficiently fine. Practical exercises are set, based on a table giving climatic conditions at from 50 to 150 selected stations for each continent. From these data the student is expected to compile his own maps. If he does it in the light of the parallel discussion of the text, he will have a good working knowledge of the climates of the world. This is made the key to the distribution of natural vegetation and cultivated crops in the best modern manner.

Each continent is illustrated by a set of maps showing sea-level isotherms, actual isotherms, isobars, and winds and rainfall, each for January and July, a relief map shaded between contours selected to bring out desired contrasts in each case, a map of river basins and of vegetation. The use of large-scale orographic maps is constantly insisted on. In descriptions of relief, there is little said about ranges and peaks, but the subject is developed according to passes, valleys, trade routes, and lines of communication, which lead to the location of towns and cities. The resulting picture is one of fine detail rather than of impressionistic breadth.

In 95 pages of general geography, land forms, maps and map reading (elaborately), climate and biogeography are discussed, including the distribution of man and important economic products. Regional geography, which occupies the bulk of the book, is treated in the main according to political divisions. In the preliminary description of each continent, natural regions and their importance are not overlooked, but the aim is to present a view of ethnic, economic and social, rather than of physiographic units. First place is given to the British Isles, which occupy 70 pages. The usual classification of rocks and geological formations is made geographical by indicating their influence upon relief, soils, vegetation, and industries. In such a country, where natural divisions are small, well defined and generally recognized, regional description is delightfully easy and satisfactory. The links of the geographical chain which runs through the Lancashire cotton industry are fully traced in less than half a page. Salisbury Plain and the Vale of Wardour furnish occasion for a little gem of compressed and polished geography, showing the intimate relationships of structure, landscape, chalk downs, valleys, coombs, soils, flints, glacial features, quarries, pastures, ploughland, woods, plant associations, bird life, sheep, wheat, village sites, Stonehenge, Old Sarum, Roman roads, Salisbury Cathedral, base line of Ordnance Survey, military camp, and modern railways.

Europe occupies 170 pages; Asia, 105, and Africa, 73. Space forbids quotation, but tempting samples may be found in the cow as the dominating influence in the life of Alpine peasants (p. 267), the description of the Pamirs (p. 341), and the story of the Congo quest (p. 404). That no more space is given to North America than to Africa and considerably less than to Australia and South America combined is evidence either that North American geography is very simple or that the British geographer lacks a sense of proportion. It is to be hoped that the absurdity of the time-honored precedent of placing America after New Zealand and the Pacific tail-ends of the world, so that Hawaii is presented before the United States, may, in the lapse of ages, become evident to European geographers. A similar sentiment is aroused by the 17 pages given to the 7,000,000 inhabitants of Canada preceding 20 pages given to the United States with its population of 100,000,000. The section on the United States is the least satisfactory in the book, partly on account of brevity and partly on account of flaws which one on the ground can easily pick. In two pages on the development of communications in North America nothing is said about events later than 1800, except the Canadian Pacific, Grand Trunk Pacific and Canadian Northern Railways. A full-page map of the Canadian Rockies, showing river trenches, passes, and railways, is admirable. Cape Ann, Mass., is canonized and Anglicized into St. Anne's Head. New York, the second city, first seaport, and imminent commercial and financial center of the world, is dismissed in a dozen lines of fine print. Chicago (''on L. Huron'') is said to be ''to the north of deep ravines cut by the Ohio tributaries in the glacial moraine lands.'' (Ye shades of the Wabash, the Kankakee, and the Illinois!) The elevations of the Great Lake ports are given as being from 100 to 260 feet above the lake levels, and the river ports of the Missouri, from Great Falls and Bismarck down, are stated as a student of the map might think they ought to be rather than as they are. Iron is still mined in the Ozarks, but mining in the plateau states is only incidentally mentioned. Central California is placed in ''a desert depression,'' the first Pacific railways ''turned the southern end of the Sierra Nevada in 1866,'' and coal mining is made more important in Washington than lumbering. The Panama Canal, ''owing to tidal differences of level between the Pacific and Atlantic, will contain locks,'' and is accounted for by reference to Spanish mule trails and the railroad of 1855.

Jupiter is said to have nodded sometimes, and infallibility is superhuman. The American teacher would shrink from the adventure of piloting even a robust class through Mr. Andrews' book, but if he did, the class would know enough geography, outside that of the United States, to last them a lifetime. C. R. DRYER.

DICKS, A. J. **Cambridge geographical text books: Intermediate.** xi and 362 pp.; maps, diagrs., ills., index. University Press, Cambridge, 1912. 8 x 5½.

Production of a general geography compressed into three hundred pages is a difficult task unless carried out in the light of some dominant guiding principle. Such a principle is not apparent in the above text, which, partaking of the nature of a gazetteer, is chiefly open to criticism on the selection and veracity of the facts presented. Material is fairly distributed regionally, but errors abound and there are some serious omissions. A cursory examination reveals the statement that ''Spain holds none of the mainland'' of Africa and former German Southwest Africa is entirely ignored. In the section on

South America we are told that "more than half the coffee (of Brazil) is exported from Rio Janeiro" (in 1910, to take a year data for which should have been available for the text, the entire export trade of Santos was nearly two and a half times that of Rio Janeiro and 99 per cent of it was coffee!); that in Bolivia the llama is "the only animal which can be used for mountain traffic" (no mention of the importance of transportation by mule). Other statements are misleading. La Paz (Bolivia) is the greatest market for cinchona from the *montaña,* but the description of it as located "in the center of the cinchona district" is ambiguous. The teacher of the literal-minded, fourteen-year-old pupil will anticipate trouble from such an unfortunate term as " 'Indo'-European" applied to the Peruvian *mestizo.* Causal connections might have been further developed without introduction of more material. Thus the nitrates of Chile might have been placed in the Atacama Desert mentioned in the previous paragraph, instead of being simply listed with other mineral products.

HAAREN, J. H. **First notions of geography.** For fourth-year classes. v and 154 pp.; ills. D. C. Heath & Co., New York, 1914. 45 cents. 8 x 6.

Intended for pupils beginning the fourth year of the elementary school. The aim is to give the child a knowledge of the fundamentals of geography. Such subjects are taken up as weather, direction, clouds, rivers, seasons, food, clothing, shelter. The pupil is prepared to read a map. A great deal of the text is written in story form, the story being of an imaginary school-teacher and her class. By means of this teacher and her school the author gives the real child his "first notions of geography."

WILBUR GREELEY BURROUGHS.

BABER, ZONIA. **Lost opportunities in teaching geography.** *Journ. of Geogr.,* Vol. 14, 1915-16, No. 8, pp. 295-298.

BARKER, MABEL. **Education for a state of peacedom through regional study. (A conference on regional surveys, V.)** *Geogr. Teacher,* No. 43, Vol. 8, 1915, Part 3, pp. 169-172.

BELL, VALENTINE. **Regional survey in the elementary school. (A conference on regional surveys, III.)** *Geogr. Teacher,* No. 43, Vol. 8, 1915, Part 3, pp. 164-166.

BRANFORD, V. V. **The regional survey as a method of social study. (A conference on regional surveys, II.)** *Geogr. Teacher,* No. 42, Vol. 8, 1915, Part 2, pp. 97-102.

BROWN, R. M. **Home-made maps and atlases.** *Journ. of Geogr.,* Vol. 15, 1915-16, No. 3, pp. 77-79.

CORNMAN, O. P., AND OSCAR GERSON. **Geography by grades, New York State edition: Third and fourth years.** 223 pp.; maps, diagrs., ills. Hinds, Noble & Eldredge, Philadelphia and New York, 1911. 8 x 6.

—— **Current material for the geography teacher.** *Journ. of Geogr.,* Vol. 15, 1916-17, No. 3, pp. 98-101. [Quotations from various current sources.]

CUSHING, S. W. **High-school commercial geography.** *Journ. of Geogr.,* Vol. 15, 1916-17, No. 3, pp. 87-91.

FLEURE, H. J. **Regional surveys in relation to geography. (A conference on regional surveys, I.)** *Geogr. Teacher,* No. 42, Vol. 8, 1915, Part 2, pp. 89-96.

GARLICK, S. A. **The filing and presentation of illustrated geographical material.** Diagrs. *Journ. of Geogr.,* Vol. 15, 1916, No. 3, pp. 95-97.

—— **Geography: A report on a preliminary attempt to measure some educational results.** 38 pp.; diagrs. *Dept. of Educ. Investigation and Measurement Bull. No. 5 (School Document No. 14-1915).* Boston, 1916.

GOODE, J. P. **Geography.** *Commercial Educ. Bull. No. 25,* pp. 52-53. Bur. of Education, Washington, D. C., 1916. [Author's abstract of a paper read at the Commercial Education Subsection of the Second Pan American Scientific Congress held in Washington, December, 1915–January, 1916.]

GROSE, H. D. **How library work, field work, and laboratory work may be made mutually supplemental in the teaching of earth science.** *Journ. of Geogr.,* Vol. 14, 1915-16, No. 7, pp. 253-256.